

therapy including a vitamin K antagonist added to the classical dual antiplatelet therapy. One patient died from a recurrent subdural haematoma, another one had a peripheral embolism.

**Conclusions:** In this prospective multicenter study, despite a dual antiplatelet therapy, LV thrombus occurred in 26% of patients after an anterior MI complicated with LV dysfunction. Focused TTE has a high accuracy for their detection. CMR-DE should be performed only in patients in whom the apex is not clearly seen

## 0027

### Dobutamine-related coronary spasm among patients with false positive dobutamine stress echocardiography: prevalence and predictors

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**Background and objective:** Dobutamine stress echocardiography (DSE) is being consistently used as an exercise-independent stress modality aimed at the detection of coronary artery disease (CAD) and the evaluation of myocardial ischemia. It may though occasionally induce coronary vasospasm. In this study, we aimed to evaluate the prevalence and predictors of dobutamine-related coronary spasm in patients without known CAD and false positive DSE (positive DSE but no significant coronary lesions on angiogram)

**Methods:** 3952 patients referred to our echocardiography laboratory for DSE between January 2010 and May 2012 were prospectively investigated. Those with positive DSE underwent coronary angiograms with systematic methylergometrine intracoronary injection in case of absence of significant coronary stenosis or spontaneous occlusive coronary spasm. Patients with spontaneous occlusive coronary spasm or positive methylergometrine test but no significant stenoses were enrolled and compared with those with positive DSE but no coronary lesions nor spontaneous or induced spasm (« true » false positive DSE)

**Results:** 29 patients with DSE-related vasospasm (19.4% of positive DSE without known CAD) were compared with 56 patients with no lesions and no spasm (« true » false positive DSE). They were more frequently smokers (72.4% vs 37.5%;  $p=0.003$ ); they had more frequently dyslipidemia (79.3% vs 43%;  $p=0.001$ ); they also had a larger ischemic area at peak DSE (3.4 vs 2.7 segments;  $p=0.05$ ).

On multivariate analysis, dyslipidemia (HR=10.7; 95% CI= [2.7-42.1];  $p=0.001$ ) and active smoking (HR=6.1; 95% CI= [1.7-21.1];  $p=0.004$ ) were found to be independent predictors of spasm-related DSE rather than « true » false positive DSE.

**Conclusion:** DSE-related coronary spasm is present in a significant proportion of patients with erroneously labelled « false » positive DSE and should systematically be ruled out. Dyslipidemia and active smoking were independent predictors of spasm rather than « true » false positive DSE

## 0347

### Structural myocardial dysfunction in bicuspid aortic valve disease – a speckle tracking study

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**Objective:** of the study is to compare the longitudinal strain values in patients with bicuspid aortic valve (BAV) disease in comparison to degenerative aortic stenosis and regurgitation, and control population.

**Methods:** Patients with BAV and tricuspid degenerative aortic valve were selected in the absence of 1) left ventricular (LV) dysfunction, 2) history of myocardial infarction and 3) atrial fibrillation. The study included 48 patients with isolated BAV (54±19 years, 25% [n=12] with significant aortic stenosis), 30 isolated degenerative aortic stenosis or regurgitation (77±11 years, 26% [n=8] with significant aortic stenosis and 30 healthy control subjects (48±15

years). Patient global longitudinal strain was computed from apical views using speckle tracking analysis (EchoPAC, GE).

**Results:** Left ventricular ejection fraction was similar in BAV (62±6%), degenerative (63±6%) and control groups (62±3%). In contrast, longitudinal global strain was more impaired in BAV (−19±2%) than in degenerative (−20±2%,  $P=0.04$ ) and control groups (−21±2,  $P<0.001$ ), even in BAV patients without significant aortic valve disease (−19±2% for BAV vs. −20±2% for degenerative,  $P=0.01$ ). Interestingly, longitudinal global strain was similar between degenerative group without significant aortic stenosis and control (−20±2% vs. −21±2%,  $P=0.5$ )

**Conclusion:** Impaired longitudinal strain in BAV patients is observed independently of the presence of significant aortic valve disease while in degenerative group longitudinal strain is only impaired in the presence of significant aortic stenosis. These results suggest the presence of a structural myocardial disease in BAV disease.

## 0470

### Echocardiographic estimate of pulmonary vascular resistances: a validation in a non-selected population with pulmonary hypertension

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**Introduction:** Invasive hemodynamic procedures are still necessary to appreciate pulmonary hypertension characteristics. A few studies have addressed the issue of echocardiographic evaluation, but lack an external validation of their results with various settings and patients. The aim of our study was to appreciate the value of 2 published echocardiographic evaluations of pulmonary vascular resistances (PVR) based on tricuspid regurgitation maximal velocity (TRV) and right ventricular outflow tract systolic time velocity integral (TVI).

**Methods:** All of the patients presenting during 2013 for invasive haemodynamic evaluation with a suspected pulmonary hypertension were prospectively included, with echocardiography being done within 24 hours of catheterization. The TRV/TVI and  $TRV^2/TVI$  ratio and echographic estimations of PVR were compared with catheter values; predictive values to detect elevated PVR were assessed.

**Results:** 43 patients were included, 12 with atrial fibrillation, 16 with valvular disease, 14 with hypertrophic cardiopathy. Mean pulmonary pressure was  $41\pm11$  mmHg. TRV/TVI and  $TRV^2/TVI$  were correlated with PVR ( $r=0.71$  and  $r=0.78$  respectively,  $p<0.01$ ). Using  $TRV^2/TVI$ , a cutpoint value of 0.98 had a specificity of 86% and a sensitivity of 80% to predict PVR over 6 UW. Estimation of PVR with the previously published formula  $PVR = 5,19 TRV^2/TVI - 0.4$  was 100% correct to predict an PVR under 3 UW and 93% correct to predict an PVR over 6 UW.

**Conclusion:** Our results confirm the value of echocardiographic measurement of  $TRV^2/TVI$  to evaluate PVR in a routine fashion for a non-selected population with high pulmonary pressure (figure next page).

## 0541

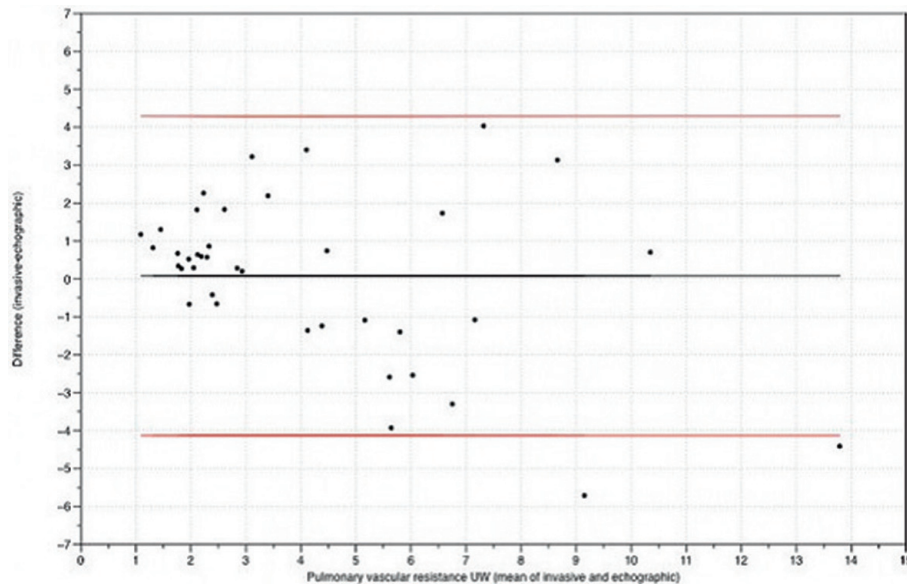
### The appropriate use criteria guidelines for echocardiography predict the clinical usefulness of transesophageal examinations in routine practice

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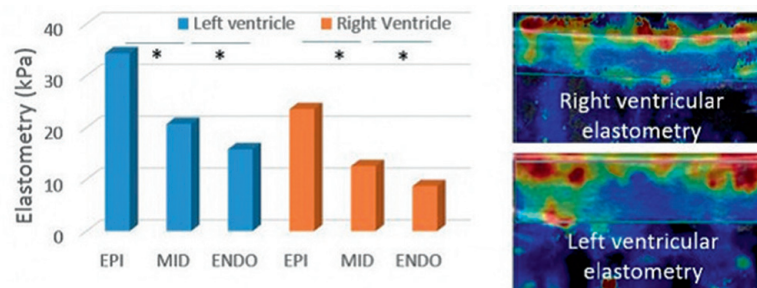
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**Background:** Management of increased referrals for echocardiography examinations is a daily challenge. Compared to transthoracic exploration, transesophageal echocardiography (TEE) is semi-invasive, and is more time consuming. Mainly based on expert consensus Appropriate Use Criteria guidelines for echocardiography (AUC) have been recently published. However, the ability of these criteria to predict the actual usefulness of TEE have not been yet well explored.

**Aim:** To investigate the ability of AUC to predict the actual usefulness of TEE in daily clinical practice.



Abstract 0470 – Figure: Bland and Altman plot



Abstract 0552 – Figure: Elastometry

**Methods:** Retrospective review of medical records from 436 TEEs carried out during a 1 year period was performed. The TTEs were classified according to the AUC guidelines and were also assessed for actual clinical usefulness blinded to AUC classification. The TEE was considered useless when the test results were finally not used for a medical decision impacting the clinical management of the patient.

**Results:** 85% of the TEEs were appropriate according to AUC and 82% were clinically useful. The agreement between the both classifications was good: 89% of the examinations were sorted similarly by the both methods ( $\kappa=0.6$ ). In multivariate analysis, independent factors linked to the TEE clinical usefulness were AUC classification as appropriate (Odd ratio = 62) and TEE orderings from the Cardiology department (Odd ratio = 2.4).

**Conclusion:** The AUC Guidelines predict the clinical actual usefulness of TEE in Routine Practice. A larger use of these guidelines seem to be a good way to rationalize the TEE prescription in routine practice.

## 0552

### The first ever human cardiac echo-palpation to measure heart stiffness

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**Background:** Increased cardiac stiffness, a marker of morbimortality, is found in several heart diseases included heart failure with preserved ejection fraction. Unfortunately, the heart is inaccessible to palpation and elastometry, a surrogate for stiffness assessment, could be an alternative. This CPP approved study investigates whether elastometry can be measured in the heart.

**Methods and results:** In 20 anesthetized patients for cardiac surgery, elastometry was measured epicardially and longitudinally both on the right and left ventricle using a standoff. Image acquisition was made after the last cardiac beat in a loaded heart using a dedicated probe connected to a platform for elastometry measurement. Measurements were made off-line. Ejection fraction was  $63 \pm 5\%$ , left ventricular end-diastolic diameter was  $54 \pm 2$  mm and E/A ratio was  $1.18 \pm 0.01$ . Mean right ventricular elastometry was lower than left ventricular elastometry ( $14.9 \pm 3.8$  kPa vs.  $22.1 \pm 5.3$  kPa,  $p = 0.0001$ ). Whichever the ventricle, epicardial elastometry was higher than endocardial elastometry resulting in an outer/inner myocardial elastometry gradient (see figure).

**Conclusion:** The heart is remotely palpable by echography resulting in higher left ventricular elastometry than in the right ventricle and an epi- to endocardial gradient.